General

Guideline Title

Consensus-based clinical practice guideline for the management of volatile substance use in Australia.

Bibliographic Source(s)

National Health and Medical Research Council (NHMRC). Consensus-based clinical practice guideline for the management of volatile substance use in Australia. Melbourne (Australia): National Health and Medical Research Council (NHMRC); 2011 Sep. 151 p. [280 references]

Guideline Status

This is the current release of the guideline.

Regulatory Alert

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- May 10, 2016 – Olanzapine : The U.S. Food and Drug Administration (FDA) is warning that the antipsychotic medicine olanzapine can cause a rare but serious skin reaction that can progress to affect other parts of the body. FDA is adding a new warning to the drug labels for all olanzapine-containing products that describes this severe condition known as Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS).

Recommendations

Major Recommendations

The definitions for grades of recommendations (A–D) and for type of recommendation (evidence-based recommendation [EBR], consensus-based recommendation [CBR], and a practice point [PP] are provided at the end of the "Major Recommendations" field.

The following are the recommendations for the clinical management of volatile substance use (VSU). For further information on the evidence that was reviewed when formulating these recommendations and the clinical questions on which the recommendations are based, refer to the original guideline document.

Managing Acute Intoxication

Maintaining Safety

Treat the person with respect. Ensure that all your actions and those of staff help maintain the person's dignity as much as possible. (PP)

Consider safety issues for the person being cared for, other staff and yourself (CBR):

- If you can smell fumes (e.g., from the person or their clothing), let fresh air into the room and make sure the room is kept ventilated.
- If you feel threatened, call the police or other appropriate help.

(For non-clinical settings) Using local service protocols, arrange transfer to medical services if the person shows acute behavioural disturbance, has medical problems, is not recovering normally, or if staff feel that the person needs medical care. (CBR)

If medication is needed to keep the person safe as part of their care (refer to Section 4.2.3., "Medication," in the original guideline document), follow your local health service's protocols for the use of medicines. (PP)

Emergency Care

Try to calm the person down (CBR):

- Speak to the person in a calm voice and reassure them that they are safe.
- Use non-threatening body language.
- Take the person to a quiet place (if possible).
- Use clear and simple language.
- Limit the number of people who are speaking to the person – to avoid confusion.

Do not chase a person who has inhaled a volatile substance. (CBR)

Avoid physically restraining the person. If restraint is necessary for safety, follow legal requirements and restrictions. (CBR)

Manage the situation as an emergency if the person is injured, has collapsed, is unconscious or having a seizure. (CBR)

Follow the DRSABCD steps (CBR):

D. Check for dangers (refer to Section 4.2.1., "Maintaining Safety," in the original guideline document).

R. Check for a response (e.g., check whether the person is conscious by asking them to squeeze your hand if they can hear you).

S. Send for help (e.g., call an ambulance or contact local emergency services). While waiting for the ambulance/emergency help, perform basic first aid.

A. Check that the airway is open by carefully tilting the person's head back and gently lifting the chin forward. Clear the airway if it is blocked.

B. Check if the person is breathing.

C. Commence cardiopulmonary resuscitation if there are no signs of life. Give 30 chest compressions (two compressions per second) followed by two breaths.

D. If the person doesn't respond, use defibrillator if available.

Medication

Most cases of acute intoxication due to VSU can be managed by removing the substance and letting the person rest. Sedatives should only be used if necessary for acute behavioural disturbance. (CBR)

Medicines should only be prescribed and administered by staff who are authorised to do so, and who are trained and experienced in their use, and in the management of potential related adverse effects of these medicines, including respiratory arrest. (CBR)

If medical treatment is necessary to manage intoxication due to VSU, follow your hospital's/health organisation's policy and protocols. If sedation is necessary for the person's safety and there is no applicable policy or protocol, consider one of the following options for managing acute behavioural disturbance due to VSU (CBR):

- Midazolam intramuscular (IM)* or diazepam oral/rectal/intravenous (IV) (use benzodiazepines with caution due to potential respiratory depression, and only if all of the following apply: the person can be closely observed and vital signs monitored by appropriately trained health professionals, cardiopulmonary resuscitation equipment is available onsite, and staff are trained in cardiopulmonary resuscitation techniques)
- Olanzapine IM*
- Haloperidol*

Doses depend on person's body weight, age, other medicines or drugs taken and general health. (CBR)

*Not registered in Australia for use in the management of acute behavioural disturbance associated with intoxication due to substance use. Use should be avoided in pre-pubescent children.

When prescribing medicines, consider the potential risks of (PP):

- Drug-to-drug interactions with other substances (including medicines and alcohol)
- Cardiac sensitisation
- Other adverse effects of medicines

Initial Monitoring (2–4 Hours if No Complications, or Until Recovered)

If possible, arrange for person to be monitored in a clinical setting throughout the period of acute intoxication, regardless of the person's pattern of use. (CBR)

In Clinical Settings

Encourage the person to stay until significantly recovered and it is safe to leave. Monitor the person until recovered* for (CBR):

- Cardiopulmonary function (blood pressure, pulse rate, oxygen levels, electrocardiogram [ECG])
- Temperature
- Neurological observations
- Changes in mood (e.g., heightened anxiety or agitation)
- Changes in alertness (Glasgow Coma Scale/Alert, Voice, Pain, Unresponsive [AVPU] scale), clearness of thinking and behaviour.

*Usually approximately 2–4 hours from the time of admission for uncomplicated cases, or continued until the person is clinically stable if recovery is delayed.

In Other Settings

Arrange referral for clinical monitoring, if possible. If clinical referral is not possible, encourage the person to stay until it is safe to leave. (CBR)

Keep watching the person until significantly recovered (e.g., 6 hours) for changes in mood, alertness, clearness of thinking and behaviour. (CBR)

Call an ambulance (if available) or contact local emergency medical services if (CBR):

- The person is becoming more anxious or agitated.
- The person is losing consciousness or their thinking is becoming less clear (you may have to gently wake the person each time you check).
- The person's behaviour is unusual.
- The person has a seizure.
- Staff do not feel confident to manage the situation.

Follow the DRSABCD steps (see above). (CBR)

The person can go home in the care of a responsible adult when (CBR):

- Alert and aware of their surroundings
- Speaking normally
- Walking normally
- Breathing normally
- Neurological observations normal (if done)
- Oxygenation normal (if tested)

Follow-up Monitoring (24 Hours)

After initial monitoring, the person can be released into the care of a responsible adult (such as a family member) if fully recovered and you are confident that their condition is stable. (CBR)

Advise the responsible adult to keep monitoring them for 24 hours after release. (CBR)

Before release, arrange referrals to services that can assist with recovery (e.g., psychological therapies outreach services, drug and alcohol services). (CBR)

In Clinical Settings

- Assess whether the person needs further medical treatment. (CBR)
- Arrange referrals as necessary. (CBR)
- Arrange clinical follow-up. (CBR)

In Other Settings

- Arrange referral to medical services for assessment and treatment. (CBR)

Managing Withdrawal Symptoms

Provide a culturally safe environment during recovery. (PP)

Provide a quiet, safe place to recover, where there is nothing to stimulate the person, and make sure they rest and get plenty of sleep. (CBR)

Make sure the person eats and drinks plenty of fluids. (CBR)

Provide treatment for symptoms, if necessary. (CBR)

In Clinical Settings

- Administer analgesics as required. (CBR)
- Manage anxiety or agitation in line with local treatment protocols. If no local protocol applies, consider administering a short-acting benzodiazepine (e.g., lorazepam or oxazepam). (CBR)
- If benzodiazepines are administered, use an appropriate scale to titrate the dose. (CBR)

In Other Settings

- Give paracetamol if the person has a headache or a high temperature. (CBR)
- If pain is not relieved, arrange medical assessment. (CBR)

Monitor the person's recovery. (CBR)

In Clinical Settings

- Take frequent regular observations (blood pressure, pulse rate, respiratory rate, temperature, oxygen saturation). (CBR)
- Monitor for signs of head injury or infections (e.g., pneumonia). (CBR)
- Monitor requirement for and effects of medicines. (CBR)

In Other Settings

Check the person frequently and regularly and monitor any change in symptoms. (CBR)

Arrange medical assessment immediately if (CBR):

- Symptoms become worse.
- The person has trouble breathing.
- The person has any physical problems.
- The person is agitated or anxious.
- The person is not becoming more alert over time.
- The person is behaving in an unusual way.

Comprehensive Post-acute Assessment

Assessment Considerations

Comprehensive assessment should be made when the person has recovered from acute intoxication. (CBR)

Explain the purpose of the assessment and obtain the person's consent before conducting any assessments (refer to Section 3.1.2., "Informed Consent," in the original guideline document). (PP)

Consent may include consent to share information with other agencies involved in the person's care. (PP)

Assessments should be carried out in the person's first language, where possible. (PP)

If it is not possible for the assessor to perform the assessment in the person's first language, an interpreter should be present during the assessment. (PP)

Initial/Post-acute Assessment

The initial or post-acute assessment should include (if possible) (CBR):

- A clinical and social history (e.g., illnesses and injuries, medical treatments, accommodation, occupation, relationships)
- Recreational substance use history (types of inhaled substances used, frequency, quantity, alcohol and other drug use)
- Brief cognitive assessment (e.g., Mini-Mental State Examination)
- Screening for mental health conditions using a validated instrument (e.g., Kessler Psychological Distress Scale – K10, Strong Souls)
- Assessment of risk for violence or self-harm
- Physical examination
- Laboratory investigations (full blood screen, urine drug screen), electrocardiogram (ECG) if possible
- Pregnancy test for females, if indicated
- Further investigations as indicated

If any of these assessments cannot be made during the initial assessment, they should be completed as soon as possible (in stages, if necessary). (CBR)

Further Assessment Including Specialist Assessment

Specialist assessment should be arranged as indicated and may include the following (CBR):

- Detailed assessment of substance use (specialist in addiction medicine or alcohol and other drug service)
- Full neurological assessment (e.g., neurologist)
- Cardiovascular assessment (e.g., cardiologist)
- Detailed cognitive assessment (e.g., psychiatrist/child and adolescent psychiatrist, clinical psychologist/child psychologist)
- Detailed mental health assessment (e.g., psychiatrist/child and adolescent psychiatrist, clinical psychologist/child psychologist)
- Assessment of daily living skills (e.g., occupational therapist)
- Other assessments as indicated (e.g., paediatrician, speech pathologist)

When caring for a pregnant woman who uses inhaled volatile substances (CBR):

- Arrange standard antenatal care (including blood tests, physical examination and other routine investigations) if she has not been in contact with medical services while pregnant
- Arrange referral to an obstetrician for a high-risk pregnancy assessment.

If more information is required to clarify aspects of the person's history (e.g., developmental history, occupational history, mental health history, family medical and social history including substance use and mental illness, injuries, education and forensic history), consider contacting other people or services (subject to ethical and legal considerations including privacy legislation) (CBR):

- Family
- Hospital admissions
- Police
- Department of justice
- Schools

Brief Intervention

All healthcare workers who have contact with people who use volatile substances should provide brief intervention whenever there is an opportunity to do so (if they have the appropriate training and skills). (CBR)

Brief intervention should include giving the person clear, factual information about the health risks of VSU and the benefits of quitting. (CBR)

Case Management

Case management should be offered to all chronic volatile substance users, if possible. (CBR)

Case management should be offered to all pregnant volatile substance users, if possible. (CBR)

Consent must be given by the person before their information can be shared between care providers and services. (PP)

When multiple providers/services are involved in providing a person's care, they should negotiate to appoint a single coordinating service. The coordinating service should (PP):

- Take responsibility for coordinating referrals and follow-up.
- Nominate one person to be the person's main point of contact.
- Ensure all relevant information is shared between provider services, subject to the person's consent.
- Maintain clear and effective communication between provider services.

The coordinating service should encourage the person's family to be involved in the case management process and should consult family members as appropriate. (PP)

An interpreter should be involved if the main designated case manager does not speak the person's first language. (PP)

Care plans should be culturally appropriate. (PP)

Education

Universal Drug Education Programs

When providing education about VSU to groups that may include young people with different levels of experience with VSU, the information should be appropriate for the local community and culture. Educators should (PP):

- Focus on VSU that is already occurring in the community.
- Emphasise information about reducing harm.
- Avoid giving young people new ideas about substances that can be inhaled to become intoxicated.

Targeted VSU Education

Education for users of inhaled volatile substances, those at risk, and their families and peers, provide information about (PP):

- Health effects of volatile substances and strategies for reducing harm
- Basic first aid for an intoxicated person (e.g., assessing danger to the person and others, letting the person rest in a quiet safe place with fresh air, making sure the person can breathe, when to call emergency services)
- How to monitor an intoxicated person during and after recovery (e.g., managing symptoms, what to look for, making sure the person eats and drinks, when to call emergency services)
- What to do if there is danger (e.g., contact people in community responsible for safety, such as police and other authorised people)
- Information about services that can help the person recover (e.g., counselling services, residential rehabilitation facilities, youth and activity programs)

For families of people who use inhaled volatile substances, their peers and other people of influence, provide or arrange education about VSU. (PP)

For all chronic users of inhaled volatile substances, provide or arrange education about the short-term and long-term harmful effects of VSU and the positive health and social benefits of reducing VSU and quitting. (CBR)

Psychological Therapies

Arrange psychological therapy for all volatile substance users (occasional, regular or chronic users), in conjunction with other treatment. (CBR)

Consider one or more of the following (CBR):

- General counselling (person-centred counselling)
- Family-inclusive practice
- Cognitive–behavioural therapy
- Motivational interviewing
- Narrative therapy (e.g., storytelling or yarning)
- Group therapy
- Peer mentoring
- Therapeutic community

Healthcare workers who provide psychological therapies in the management of VSU should (PP):

- Have appropriate skills, experience or formal training
- Receive appropriate clinical supervision and support
- Use the person's first language (or, if not possible, arrange for an interpreter to be present)

When providing cognitive–behavioural therapy for a person who has an intellectual impairment, the treatment should be tailored to the individual's capacity (e.g., emphasise the behavioural component of therapy). (CBR)

Activity and Youth Development Programs

Role of Activity and Youth Development Programs

For all volatile substance users (occasional, regular or chronic users), consider referral to an appropriate activity program/youth development program. (EBR–Grade D) (Simpson, 1992; Preuss & Brown, 2006; Butt, 2004; Cheverton, Schrader, & Scrogings, 2003; Polsen & Chiauzzi, 2003; Burns et al., 1995; Gostzyla & George, 2003)

Recommend or arrange participation in activity programs/youth development programs for all community members at risk of VSU, where possible. (PP)

Activity programs/youth development programs should be offered alongside other VSU interventions and should not be used as the main approach to VSU management, especially in communities with a high proportion of chronic users. (PP)

Make programs available to peers and those at risk, not just people who use volatile substances. (PP)

Designing Activity and Youth Development Programs

When developing activity programs and youth development programs, consider the following principles (PP):

- Tailor programs and select appropriate activities to meet specific needs of intended participants such as different age groups, girls, boys, pregnant women, urban communities, rural/remote communities, people with brain damage affecting their thinking.
- Offer participants opportunities to learn skills and build capacity for taking control of their lives – not just recreation.
- Involve participants' families and community in activities.
- Run intensive programs during times when there is more VSU (e.g., during school holidays, on weekends, at night).
- Base programs on activities that are practical to run using local resources, so that programs are sustainable long term.
- Involve young people and their families in designing and running youth development programs.

Residential Rehabilitation

Mainstream Residential Rehabilitation

Residential rehabilitation for VSU is recommended for the following groups, after other interventions have been tried (CBR):

- Chronic users
- Regular users who also use other substances (polydrug users)
- Users who have comorbid mental health conditions
- Pregnant users, where further use is anticipated

Before being admitted to a residential rehabilitation facility, people who use volatile substances should receive a thorough medical and mental health assessment to identify any conditions that will require specific treatment. (CBR)

If it has not been possible to arrange medical and mental health assessment before admission, these should be arranged as a matter of urgency following admission. (CBR)

If possible, the person should be referred to a residential rehabilitation where their first language is spoken by the staff. If this is not possible, access to an interpreter should be arranged as necessary, following admission. (PP)

Outstation Rehabilitation

Outstation rehabilitation is recommended for all volatile substance users (occasional, regular or chronic) where culturally and socially appropriate, if the person's family agrees. (CBR)

Before being admitted to an outstation rehabilitation facility, people who use volatile substances should receive a thorough medical and mental health assessment to identify any conditions that will require specific treatment. (CBR)

If it has not been possible to arrange medical and mental health assessment before admission, these should be arranged as a matter of urgency. (CBR)

If possible, the person should be referred to an outstation rehabilitation facility where their first language is spoken by the staff. If this is not possible, access to an interpreter should be arranged. (PP)

Managing Co-existing Health Conditions

Arrange a full physical and mental health assessment by the person's general practitioner or other appropriately trained health worker to determine what treatment is needed. (CBR)

For people with mental health conditions in addition to VSU, arrange or refer for effective treatment from an appropriately trained health professional. (CBR)

(In clinical settings) provide treatment for mental health conditions according to your health service's protocols. (PP)

If no local protocol applies, follow current national management guidelines for the specific condition or for the management of comorbid substance use and mental illness. (PP)

Before prescribing any medicine, assess the potential adverse effects and drug-to-drug interactions by carefully considering the effects of other medical conditions, mental health conditions, other medicines and other substances the person may be using. (PP)

When prescribing medicines for pregnant women or children, follow prescribing guidelines. (PP)

Aftercare

Provide aftercare for all volatile substance users (occasional, regular or chronic). (CBR)

Acute and residential services should incorporate aftercare plans in their discharge planning processes. (PP)

When several agencies/services are involved in providing aftercare for a person, there must be a negotiated point of responsibility. It is recommended that (PP):

- One agency is assigned responsibility for coordinating referrals and follow-up
- One person, from the agency assigned responsibility for coordinating referrals, should be nominated as the individual's contact.

Services/agencies that provide aftercare should set up systems for clear communication with each other (including sharing of information, if the person has given their consent for their personal information to be shared between providers). (PP)

Aftercare for young people recovering from VSU should include referral to an activity or youth development program (refer to Section 11, "Activity and Youth Development Programs," in the original guideline document). (CBR)

For pregnant women recovering from VSU, aftercare should involve (CBR):

- Strong encouragement to stay in contact with antenatal services for care throughout the pregnancy
- Referral to appropriate maternity care services, including referral to an obstetrician for high-risk pregnancy assessment and postnatal care

Definitions:

National Health and Medical Research Council (NHMRC) Grades for Recommendations

Grade	Description
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution

Evidence-based Recommendation (EBR) – a recommendation formulated after a systematic review of the evidence, indicating supporting references

Consensus-based Recommendation (CBR) – a recommendation formulated in the absence of quality evidence, after a systematic review of the evidence was conducted and failed to identify admissible evidence on the clinical question

Practice Point (PP) – a recommendation on a subject that is outside the scope of the search strategy

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Volatile substance use

Note: Volatile substances include the following: acetone, bromochlorodifluoromethane, butane, chloroform, ethyl acetate, hydrocarbons (aliphatic, aromatic and halogenated), petroleum, propane, tetrachloroethylene, toluene, trichloroethane, trichloroethylene, xylene.

Guideline Category

Counseling

Evaluation

Management

Risk Assessment

Treatment

Clinical Specialty

Emergency Medicine

Family Practice

Nursing

Obstetrics and Gynecology

Pediatrics

Psychiatry

Psychology

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Emergency Medical Technicians/Paramedics

Health Care Providers

Nurses

Physician Assistants

Physicians

Psychologists/Non-physician Behavioral Health Clinicians

Public Health Departments

Social Workers

Substance Use Disorders Treatment Providers

Guideline Objective(s)

To provide practical, evidence-based recommendations, consensus-based recommendations and practice points to assist healthcare workers to identify, assess and treat people who use volatile substances

Target Population

Experimental, opportunistic, and chronic volatile substance users, individuals in Australia at risk for volatile substance use, and their families and peers in Australia, including Aboriginal and Torres Strait Islander people

Interventions and Practices Considered

1. Managing acute intoxication
    - Maintaining safety while treating person with respect and dignity
    - Arranging transfer to medical services if needed
    - Following local health service protocols for use of medication
    - Emergency care
    - Medication (midazolam or diazepam, haloperidol, olanzapine) with consideration of potential risks
    - Initial monitoring (2–4 hours if no complications, or until recovered) in clinical and other settings
    - Follow-up monitoring (24 hours) in clinical and other settings
2. Managing withdrawal symptoms
3. Comprehensive post-acute assessment
    - Initial or post-acute assessment
    - Further assessment including specialist assessment
    - Caring for a pregnant woman who uses inhaled volatile substances
    - Contacting other people or services, as necessary (e.g., family, hospital admissions, police, department of justice, schools)

4. Providing brief intervention
5. Offering culturally appropriate case management to all chronic volatile substance users and to all pregnant volatile substance users
6. Education
    - Universal drug education program
    - Targeted volatile substance use (VSU) education
7. Psychological therapies
8. Activity and youth development programs
9. Residential rehabilitation (mainstream and outstation)
10. Managing co-existing health conditions
11. Aftercare

Major Outcomes Considered

- Immediate or short-term measures such as mortality and morbidity
- Harm and risk reduction measures
- Usage measures, such as usage versus no usage and frequency of use
- Patterns of usage, such as replacing use of a volatile substance with use of a harmful substance/drug
- Quality of life, social functioning, general health status, and patient satisfaction
- Treatment engagement and retention
- Cultural continuity

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Searches of Unpublished Data

Description of Methods Used to Collect/Select the Evidence

Developing a Search Strategy and Searching the Literature

The following search strategy was developed by the methodologists and was utilised to identify literature relevant to the treatment response for volatile substance use (VSU) and respond to the clinical questions (see section 16 and in Appendix C of the original guideline [see the "Availability of Companion Documents" field] for the clinical questions).

Scoping searches of the literature indicated limited studies concerning treatment interventions for VSU. Thus the systematic search of literature and associated search terms were developed to be broad and comprehensive and extensive grey literature (information that cannot be readily located through standard search engines and is not usually produced by commercial publishing organisations) and hand searching was undertaken in order to retrieve as many citations as possible.

Search terms (see Table 4a in Appendix B of the original guideline [see the "Availability of Companion Documents" field]) were developed based on the aims and scope of the review, as reflected by the clinical questions and inclusion and exclusion criteria. Search terms were applied in electronic databases as a combination of MeSH headings, keyword terms and words in the text. The inclusion/exclusion criteria enabled the use of search filters and delimiters in some databases to further focus the search, for example, searching the terms with the exclusion of articles with keywords or headings such as 'nitrite' or 'occupational'.

Groups of key terms were searched, and then systematically combined for exploring the various sets of questions, as outlined in the matrix of search terms (see Tables 4a and 4b in Appendix B of the original guideline [see the "Availability of Companion Documents" field]). Each set

(except the final grouping) began with the first two groups of terms; VSU and the population/grouping.

The search strategy was applied to six electronic databases during January-February 2010. The databases searched were: MEDLINE, PsycINFO, CINHAL, Web of Science, EMBASE and International Bibliography of the Social Sciences (IBSS). In the first instance the search period was not specified (except by the parameters of databases indicated in Table 1 of Appendix B in the original guideline [see the "Availability of Companion Documents" field]).

Further searching for grey literature and to identify additional articles was undertaken via hand-searching and 'pearling' (searching reference lists of included articles for additional relevant studies). This included the use of Google Scholar, the New York Academy of Medicine Library's 'Grey Literature Report', the Cochrane Library website, the National Inhalants Information Service website, Edith Cowan University's Australian Indigenous 'Health Infonet', and requests to international experts and the methodologists' academic and treatment networks. Searching for grey literature resulted in an additional 70 records for screening.

Assessing the Eligibility of Studies

First Screen

The methodologists undertook the overall literature search and screening process that is outlined in Figure 1 of Appendix B in the original guideline (see the "Availability of Companion Documents" field). The citations from all sources were saved into an Endnote XI library and duplicate references were identified and deleted. After removal of duplicates, a total of 2344 references were screened for relevance to the review.

This first screening of reference titles and abstracts excluded a further 2290 articles.

Uncertainty about inclusion status was resolved by group consensus among the methodologists. Despite search terms being highly targeted, and the application of search filters and delimiters where possible, the main reason for exclusion at this stage was that articles were not at all relevant to VSU. Examples included articles about environmental assessment of waste-solvent treatment options, nebulisers or medical inhalers.

Other main reasons for article exclusion were:

- Commentary, single case reports, opinion papers
- Research reporting on animal trials/testing
- General articles on drugs and/or alcohol, including guidelines and text books
- VSU prevalence studies, studies of correlates of inhalant use, risk factors, descriptions of inhalant users with no intervention or outcomes reported
- Interventions and/or settings not within the scope of the clinical questions and review, e.g., prevention interventions and schools based programs

Second Screen

Fifty four references were retrieved for review of the full text. In the final screening stage, two reviewers assessed each article and references were included in the review based on the inclusion criteria or level of applicability to the clinical question area. Uncertainty about inclusion status was resolved by group consensus among the methodologists. There was substantial variability in methodological quality of the available evidence base and references involving controlled trial designs were rare. The first screen included literature reporting on single case studies; these articles were later excluded on second screen on the committee's advice.

Also excluded were: studies from 1980, studies that did not report outcome data, studies describing treatment for oral (not inhaled) use of volatile substances and studies concerned with occupational exposure to solvents, rather than deliberate inhalation.

Table 5 in Appendix B of the original guideline (see the "Availability of Companion Documents" field) provides a summary of inclusion and exclusion criteria.

Number of Source Documents

- 54 references were retrieved for review of the full text
- 23 references were identified for inclusion in the review

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus (Committee)

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

National Health and Medical Research Council (NHMRC) Evidence Hierarchy: Designations of "Levels of Evidence" According to Type of Research Question

Level	Intervention	Diagnostic Accuracy	Prognosis	Aetiology	Screening Intervention
I	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies
II	A randomised controlled trial	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among consecutive persons with a defined clinical presentation	A prospective cohort study	A prospective cohort study	A randomised controlled trial
III-1	A pseudorandomised controlled trial (i.e., alternate allocation or some other method)	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among non-consecutive persons with a defined clinical presentation	All or none	All or none	A pseudorandomised controlled trial (i.e., alternate allocation or some other method)
III-2	A comparative study with concurrent controls: • Non-randomised, experimental trial • Cohort study • Case-control study • Interrupted time series with a control group	A comparison with reference standard that does not meet the criteria required for Level II and III-1 evidence	Analysis of prognostic factors amongst persons in a single arm of a randomised controlled trial	A retrospective cohort study	A comparative study with concurrent controls: • Non-randomised, experimental trial • Cohort study • Case-control study
III-3	A comparative study without concurrent controls: • Historical control study • Two or more single arm study • Interrupted	Diagnostic case-control study	A retrospective cohort study	A case-control study	A comparative study without concurrent controls: • Historical control study • Two or more single

Level	Intervention	Diagnostic Accuracy	Prognosis	Aetiology	Screening
	time series without a parallel control group				arm study Intervention
IV	Case series with either post-test or pre-test/post-test outcomes	Study of diagnostic yield (no reference standard)	Case series, or cohort study of persons at different stages of disease	A cross-sectional study or case series	Case series

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Critically Appraising Included Studies

Final Review

The 23 references identified for inclusion in the review were then assessed for their methodological quality and level of evidence using the National Health and Medical Research Council (NHMRC) Levels of evidence and grades for recommendations for developers of guidelines (see the "Rating Scheme for the Strength of the Evidence" field).

Relevant data was extracted for each article using a standardised review form and process developed previously (see Table 6 in Appendix B in the original guideline document; see the "Availability of Companion Documents" field). Two reviewers completed this data extraction process and a quality appraisal using the Jadad scale (see Table 7 in Appendix B in the original guideline document). Where articles involved statistical analysis quality appraisal was also undertaken by a statistician who was sourced by the methodologists.

In the case of inconsistencies or ambiguity during the data extraction and appraisal process, articles were re-examined and discussed by both the original and additional reviewers for clear consensus.

Summarising the Relevant Data

Based on the extraction forms and quality checklists, evidence and summary tables were created for each clinical question (see Appendix D in the original guideline document). These tables were presented to the Volatile Substance Use Guideline Development Committee.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

In June 2009 the Office for Aboriginal and Torres Strait Islander Health (OATSIH) commissioned the National Health and Medical Research Council (NHMRC) to develop a clinical practice guideline for the management of volatile substance use (VSU).

This guideline has been developed by the NHMRC and draws on the NHMRC's standards and procedures for externally developed guidelines under the direction of a multidisciplinary guideline development committee (see Appendix A in the original guideline document; see the "Availability of Companion Documents" field).

The set-up phase involved convening an organising committee to assist with determining the guideline scope, terms of reference, governance and to also make recommendations as to the different disciplines that should be represented on guideline development committee (see Appendix A in the original guideline document; see the "Availability of Companion Documents" field). See Appendix A in the original guideline document (see the "Availability of Companion Documents" field) for members of the organising committee. This organising committee only considered matters related to the process of guideline development and did not undertake any direct guideline development.

The organising committee convened for a day-long meeting in early June 2009. Disclosures of interest were obtained from all organising committee members prior to their participation in the committee meeting (see Appendix A in the original guideline document; see the "Availability of Companion Documents" field).

NHMRC staff developed the conflict of interest policy and procedure and the consensus process for decision making independent of the organising committee.

Appointing the Committee

Following the organising committee meeting, a multidisciplinary VSU Guideline Development Committee was established in September 2009 to produce a clinical practice guideline. The organising committee suggested a list of professional organisations and individuals to contact in regard to membership. Some members were contacted directly due to their specialised expertise in the area of VSU. Organisations were invited to nominate a representative (see Appendix A in the original guideline document; see the "Availability of Companion Documents" field).

The 16-member VSU Guideline Development Committee was established from the nominations received from the key stakeholder organisations and individual invitations. In total, six face-to-face committee meetings were held over the duration of the guideline development process (November 2009–February 2011).

Developing Structured Clinical Questions

The VSU Guideline Development Committee formulated a list of clinical questions to be addressed by this guideline during the first meeting. The methodologists assisted the committee in structuring the questions according to the PIPOH formula (Populations, Interventions, Professionals, Outcomes and Health care setting). The full list of clinical questions the guideline addressed is provided in Appendix C in the original guideline document (see the "Availability of Companion Documents" field).

Assessing the Body of Evidence and Formulating Recommendations

At the time of the development there was little evidence available to guide the formulation of recommendations about the clinical management of VSU. The committee found that most available evidence was Level IV and could not be used to draw conclusions and formulate recommendations in all but one case. Accordingly, the majority of recommendations in this guideline are based on expert opinion and were developed using the consensus process described below. Recommendations developed this way were graded as a consensus-based recommendation (CBR) and are based on what is considered to be best practice by experts in the field.

Although single-case studies were not formally appraised during the evidence synthesis phase of guideline development, the committee initially reviewed selected single-case studies solely for the purpose of generating discussion during the consensus process. After trialling this approach for the first six clinical questions (acute intoxication, withdrawal, assessment, brief interventions and early intervention, education, and case management), the committee concluded that discussion of single case studies was not useful and this approach was discontinued for the remaining sections.

The committee formulated recommendations and/or practice points for all topic areas for which clinical questions were developed, with the exception of early intervention and clinicocultural interventions.*

The committee decided not to develop recommendations on early intervention for these reasons:

- No appropriate published or unpublished evidence on early intervention in the management of VSU was identified in the literature search.
- There was general consensus among committee members that the effects of early intervention are unclear to experts in the field.

A set of clinical questions on clinicocultural interventions was included (Appendix C in the original guideline document; see the "Availability of Companion Documents" field), as the committee initially intended to formulate separate recommendations in this area. However, after reviewing the evidence and considering appropriate clinicocultural interventions for the management of VSU, the committee determined that all recommendations in the guideline should have culturally appropriate underpinnings. In addition, the committee decided that a preamble on cultural considerations should be developed to highlight the importance of understanding a person's culture when caring for people who use volatile substances.

Table 3 in Appendix C in the original guideline document (see the "Availability of Companion Documents" field) outlines the consensus process the committee used to formulate recommendations for the guideline.

*The committee coined the term "clinicocultural" for clinical interventions developed for specific cultural groups and which deliberately foreground cultural elements or considerations as integral components of care.

Rating Scheme for the Strength of the Recommendations

National Health and Medical Research Council (NHMRC) Grades for Recommendations

Grade	Description
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution

Evidence-based Recommendation (EBR) – a recommendation formulated after a systematic review of the evidence, indicating supporting references

Consensus-based Recommendation (CBR) – a recommendation formulated in the absence of quality evidence, after a systematic review of the evidence was conducted and failed to identify admissible evidence on the clinical question

Practice Point (PP) – a recommendation on a subject that is outside the scope of the search strategy

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Description of Method of Guideline Validation

Public Consultation

Public consultation was conducted from Friday 12 November 2010 to Friday 14 January 2011, during which time the draft guideline was available on the National Health and Medical Research Council (NHMRC) website. Notification was posted in *The Australian* national newspaper, and the NHMRC invited a range of stakeholders, committees, working groups and interested people to provide submissions.

Ten formal submissions were received. The committee met on 22 and 23 February 2011 to consider all responses to the public consultation submission and, where necessary, revise the guideline in accordance with the submissions.

Finalising the Guideline

The final draft of the guideline underwent a methodological review by an external guideline development expert to assess compliance with the NHMRC requirements for externally developed guidelines.

Before approving this document, the NHMRC also obtained independent clinical expert (peer) review.

The guideline was further amended in response to recommendations from the methodological and independent clinical expert reviewers.

The final guideline was submitted to the NHMRC for approval on 16–17 June 2011. Approval from the NHMRC was received on 8 August 2011.

See Appendix B.3 (see the "Availability of Companion Documents" field) for more information on the public consultation and independent clinical expert review.

Evidence Supporting the Recommendations

References Supporting the Recommendations

Burns CB, Currie BJ, Clough AB, Wuridjal R. Evaluation of strategies used by a remote aboriginal community to eliminate petrol sniffing. Med J Aust. 1995 Jul 17;163(2):82-6. PubMed

Butt J. Independent evaluation of the Get Real Challenge: issues facing indigenous youth who misuse volatile substances and outcomes of a program targeting these issues. Brisbane: Brisbane City Council; 2004.

Cheverton J, Schrader T, Scrogings Z. Sniffing around the valley: chroming in Brisbane's inner-city. Brisbane: Brisbane Youth Service; 2003.

Gostzyla E, George S. Our kids matter: paint sniffing, the Charters Towers story. Inhalant Use and Disorder Conference; 7-8 July. Townsville: Australian Institute of Criminology; 2003.

Polsen M, Chiauzzi A. Volatile substance use in Mount Isa: community solutions to a community identified issue. Inhalant Use and Disorder Conference; 7-8 July. Townsville: Australian Institute of Criminology; 2003.

Preuss K, Brown JN. Stopping petrol sniffing in remote Aboriginal Australia: key elements of the Mt Theo Program. Drug Alcohol Rev. 2006 May;25(3):189-93. PubMed

Simpson DD. A longitudinal study of Inhalant use: implications for treatment and prevention. In: Sharp CW, Beauvais F, Spence R, editor(s). Inhalant abuse: a volatile research agenda NIDA research monograph series 129. Rockville (MD): U.S. Department of Health and Human Services; 1992. p. 215-27.

Type of Evidence Supporting the Recommendations

At the time of the development there was little evidence available to guide the formulation of recommendations about the clinical management of volatile substance use (VSU). The committee found that most available evidence was level IV and could not be used to draw conclusions and formulate recommendations in all but one case. Accordingly, the majority of recommendations in this guideline are based on expert opinion and were developed using a consensus process. Recommendations developed this way were graded as a consensus-based recommendation (CBR) and are based on what is considered to be best practice by experts in the field.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate management of volatile substance use in metropolitan, rural and remote communities of Australia

Potential Harms

Adverse Effects of Medications Used for Sedation

- Medicines should only be prescribed and administered by staff who are authorised to do so, and who are trained and experienced in their use, and in the management of potential related adverse effects of these medicines, including respiratory arrest.

- Benzodiazepines (e.g., midazolam, diazepam) should be used with caution due to potential respiratory depression, and only if all of the following apply: the person can be closely observed and vital signs monitored by appropriately trained health professionals, cardiopulmonary resuscitation equipment is available onsite, and staff are trained in cardiopulmonary resuscitation techniques.
- Potential adverse effects of haloperidol include movement disorders due to extrapyramidal reactions (e.g., akathisia, dystonia, parkinsonian effects).
- Potential adverse effects of benztropine (used to manage extrapyramidal reactions) include confusion and disorientation.
- Olanzapine should be used cautiously in patients with a history of seizures or with conditions that lower the seizure threshold.
- When prescribing medicines, consider the potential risks of: drug-to-drug interactions with other substances (including medicines and alcohol), cardiac sensitisation, other adverse effects of medicines.

Contraindications

Contraindications

- Midazolam, olanzapine and haloperidol should be avoided in pre-pubescent children.
- Benzodiazepines should be avoided during pregnancy unless there is no safer option.

Qualifying Statements

Qualifying Statements

- This document is a general guide to appropriate practice, to be followed subject to the clinician's judgement and patient's preference in each individual case. The guideline is designed to provide information to assist decision-making and is based on the best available evidence at the time of development of this publication.
- The actions recommended in this guideline should be carried out by people with appropriate training and expertise in health care. This guideline is not intended for other groups who work with people who use volatile substances, such as police officers or teachers.

Implementation of the Guideline

Description of Implementation Strategy

Electronic versions of the guideline and summary document will be available on the National Health and Medical Research Council (NHMRC) website and the NHMRC Clinical Practice Guidelines Portal (www.clinicalguidelines.gov.au).

A mail-out to key stakeholders announcing the release of the guideline and summary document will be undertaken and will include details of how to access an electronic copy or order a hardcopy version. The release of the guideline will also be communicated to stakeholders through media releases, NHMRC newsletters and industry websites.

A summary document has been created to support implementation. The NHMRC, with input from the committee, created an implementation plan for the Office for Aboriginal and Torres Strait Islander Health, which details dissemination and awareness strategies as well as strategies to support local adaptation and uptake.

Research shows that guideline implementation strategies should be multifaceted.

Appropriate strategies for implementation of this guideline at a local level may include:

- Development and distribution of educational materials
- Undertaking interactive educational workshops with local healthcare workers
- Engaging opinion leaders to help promote key messages
- Using audit and feedback to measure and monitor current practice

Implementing strategies at the local level should involve examining the barriers and enablers to implementing best practice and strategies should be tailored accordingly. The information gained on barriers and enablers can be used to tailor implementation strategies to overcome barriers, maximise use of enablers and improve clinical practice.

Implementation Tools

Quick Reference Guides/Physician Guides

Resources

Slide Presentation

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Timeliness

Identifying Information and Availability

Bibliographic Source(s)

National Health and Medical Research Council (NHMRC). Consensus-based clinical practice guideline for the management of volatile substance use in Australia. Melbourne (Australia): National Health and Medical Research Council (NHMRC); 2011 Sep. 151 p. [280 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2011 Sep

Guideline Developer(s)

National Health and Medical Research Council - National Government Agency [Non-U.S.]

Source(s) of Funding

The development of this guideline was funded by the Australian Government through the Department of Health and Ageing, Office for Aboriginal and Torres Strait Islander Health.

Guideline Committee

Volatile Substance Use (VSU) Guideline Development Committee

Composition of Group That Authored the Guideline

Committee Members: Dr Tamara Mackean (*Chair*), Clinical Associate Professor, Centre for Aboriginal Medical and Dental Health University of Western Australia, Perth, Western Australia; Dr Sheree Cairney, Cognitive Neuroscientist, Menzies School of Health Research Darwin, Northern Territory; Dr John Coleridge, Emergency Physician and General Practitioner, Alfred Hospital, Melbourne, Victoria; Mr Scott Crozier, Consumer Representative, Harm Reduction Victoria, Melbourne, Victoria; Dr Jennifer Delima, Remote General Practitioner and Addiction Medicine Visiting Medical Officer, Alice Springs Hospital, Alice Springs, Northern Territory; Dr Sonja Hood, Acting Director, Research Implementation Program, National Health and Medical Research Council, Melbourne, Victoria (until May 2010); Ms Jenny Kelsall, Consumer Advocate, Harm Reduction Victoria, Melbourne, Victoria; Ms Emma Lourey, Research Scientist, Research Implementation Program, National Health and Medical Research Council, Melbourne, Victoria; Ms Susie Low, Chief Executive Officer, The Mount Theo Program, Warlpiri Youth Development Aboriginal Corporation, Alice Springs, Northern Territory; Mr Blair McFarland, Co-Manager, Central Australian Youth Link Up Service, Alice Springs, Northern Territory; Ms Coralie Ober, Research Fellow, Queensland Alcohol and Drug Research and Education Centre, The University of Queensland, Brisbane, Queensland; Dr Robert Parker, Director of Psychiatry, Top End Mental Health Service, Darwin, Northern Territory; Dr Sue Phillips, Director, Research Implementation Program, National Health and Medical Research Council, Melbourne, Victoria (from June 2010); Mr Tristan Ray, Co-Manager, Central Australian Youth Link Up Service, Alice Springs, Northern Territory; Ms Angela Rizk, Coordinator, Volatile Substances Program, Drug and Alcohol Office, Government of Western Australia, Perth, Western Australia; Ms Jan Robertson, Senior Research Officer, School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Cairns, Queensland; Ms Elizabeth Stubbs, Senior Case Manager, Tobacco Alcohol and Other Drugs Services, Department of Health and Families, Northern Territory Government, Darwin, Northern Territory (until January 2011) (When first approached Elizabeth worked as a Volatile Substance Abuse Support Worker at The Council for Aboriginal Alcohol Program Services February 2007 – January 2010)

Financial Disclosures/Conflicts of Interest

Declaration of Interest Process

Conflict of interest can be categorised as potential, perceived or actual and relates to a member's interests as well as the interests of their family relating to the guideline topic. Interests may be direct or indirect, pecuniary or non-pecuniary. National Health and Medical Research Council (NHMRC) staff developed a conflict of interest policy and procedure and consensus for decision making in accordance with the NHMRC *Members' Responsibility regarding Disclosure of Interest and Confidentiality Document* which applies to all members of the Council of the NHMRC, Principal Committees and Working Committees (in accordance with the requirements of the *National Health and Medical Research Council Act 1992*). In addition, members of this committee were asked to declare specific interests related to guideline development and/or volatile substance use (VSU) management.

The VSU Guideline Development Committee members were required to declare their relevant interests in writing, prior to appointment. The purpose of declaring conflicts of interest was to avoid any conflict between the private interests of members and their duties as part of the committee (including pecuniary interest or the possibility of other advantage). Committee members were required to update their information as soon as they became aware of any changes to their interests. There was a standing agenda item at each meeting where declarations of interest were called for and updates were recorded in the meeting minutes.

Where committee members were identified as having a significant real or perceived conflict of interest, the Chair could decide that the member

either leave the room whilst the specific area they were conflicted in was discussed or the member could remain present in the room but not participate in the discussion, or decision making on the specific area where they were conflicted. There were no instances where this occurred.

All declarations of interest were added to a register of interests (see Appendix A.4 of the original guideline document). This register was made available to the committee throughout the development of the guideline, allowing committee members to take all potential conflicts of interest into consideration during discussions, decision making and formulation of recommendations.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available in Portable Document Format (PDF) from the National Health and Medical Research Council (NHMRC) Web site .

Availability of Companion Documents

The following are available:

- Consensus-based clinical practice guideline for the management of volatile substance use in Australia. Appendices. Melbourne (Australia): National Health and Medical Research Council; 2011. 123 p. Electronic copies: Available in Portable Document Format (PDF) from the National Health and Medical Research Council (NHMRC) Web site .
- Caring for people who sniff petrol or other volatile substances. A quick reference guide for health workers. Melbourne (Australia): National Health and Medical Research Council; 2011. 43 p. Electronic copies: Available in PDF from the NHMRC Web site .
- Volatile substance use - slide set kit for educators 2012. Melbourne (Australia): National Health and Medical Research Council; 2012. Electronic copies: Available from the NHMRC Web site .

Patient Resources

None available

NGC Status

This summary was completed by ECRI Institute on June 4, 2013. The information was verified by the guideline developer on July 3, 2013. This summary was updated by ECRI Institute on October 28, 2013 following the U.S. Food and Drug Administration advisory on Acetaminophen. This summary was updated by ECRI Institute on May 24, 2016 following the U.S. Food and Drug Administration advisory on Olanzapine.

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